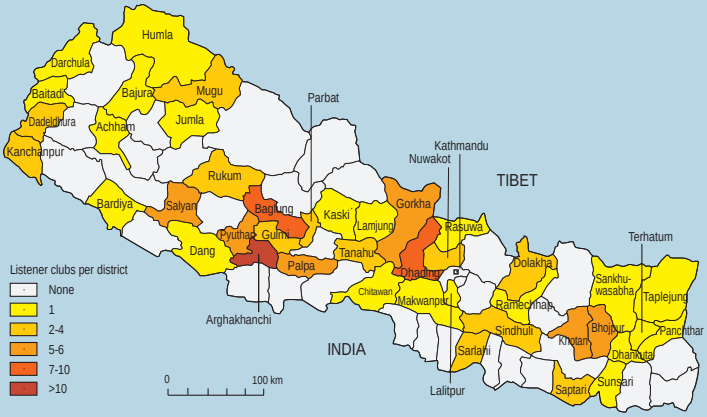

Promoting Research–User Collaboration: An Assessment of Funding Schemes

Fifth NCCR North-South Report on Effectiveness

Claudia Michel, Maria Paulsson,
Eva Maria Heim, Anne B. Zimmermann,
Karl Herweg, Thomas Breu

NCCR North-South Dialogue, no. 49

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University of Bern, Switzerland

The NCCR North-South (Research Partnerships for Mitigating Syndromes of Global Change) is one of 27 National Centres of Competence in Research established by the Swiss National Science Foundation (SNSF). It is implemented by the SNSF and co-funded by the Swiss Agency for Development and Cooperation (SDC), and the participating institutions in Switzerland. The NCCR North-South carries out disciplinary, interdisciplinary, and transdisciplinary research on issues relating to sustainable development in developing and transition countries as well as in Switzerland.

http://www.north-south.unibe.ch

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Cover images
Labour migration is a global phenomenon that plays an important role in Southern economies such as Nepal. Research results suggest that one of the most serious problems connected with labour migration is the lack of information available to migrants. A radio project – funded by the PAMS component of the NCCR North-South – made it possible to better inform migrants of the dangers and opportunities they face. Listeners' clubs were established to collectively listen to the radio programme, collect feedback, and disseminate information on migration issues in their localities. (*Left:* map by M. Kollmair and E. Lindberg, in Thieme et al 2005; *right:* photo courtesy of Paurakhi, 2004)

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Executive Summary

The Swiss National Centre of Competence in Research (NCCR) North-South was a 12-year research programme that ended in June 2013. It had an innovative funding scheme to promote collaboration between researchers and research users: Partnership Actions for Mitigating Syndromes of Global Change (PAMS). PAMS were small participatory projects of limited time and financial scope, designed to ensure that research results were tested for their practical use. The purpose of this evaluation, conducted in the final months of the NCCR North-South, is twofold. First, it assesses the value of PAMS as a funding scheme for collaboration. Second, it contains recommendations for adapting PAMS to new contexts in future, based on a comparison with similar funding schemes. We believe the report will be of value to funding agencies, transdisciplinary researchers, and other academics who engage with non-academic stakeholders.

The study is part of a series of reports on effectiveness. The NCCR North-South series "Monitoring Research Effectiveness" (MORE) takes up topics of general interest and provides information on current debates on research evaluation and transdisciplinary research. MORE is a self-assessment and learning approach that aims at enhancing researchers' understanding of the various effects of their activities. Out of the series of five, two reports are dedicated to PAMS. The first is an internal evaluation of the effectiveness and efficiency of the PAMS projects carried out between 2006 and 2010. The second – the present report – focuses on the **adequacy of the PAMS principles and procedures for enabling interaction between researchers and research users**.

Chapter 1 introduces the funding scheme PAMS with an emphasis on the goals and the structure. It explains the evaluation approach of the NCCR North-South as well as the aims and scope of this report.

Chapter 2 takes up the most relevant arguments found in the literature on user engagement in research. It introduces research paradigms that support research–user collaboration, such as transdisciplinarity. It presents different types of research–user collaboration. Finally, it discusses funding schemes oriented towards broad societal impacts.

Chapter 3 introduces the methods chosen for the evaluation. For the data collection, document analysis and expert interviews were the main methods applied. Four Swiss and international funding schemes were identified for comparing with PAMS. PAMS as well as the other funding schemes were assessed based on a typology for research–user collaboration. Depending on the assessment, the funding schemes were categorised as having a format for supporting knowledge transfer, or co-production of knowledge.

Chapter 4 provides the discussion of the results. PAMS are introduced and assessed. Afterwards, PAMS are compared with four similar funding schemes. All of them address collaboration between academic and non-academic actors and are not exclusively oriented towards technical or commercial goals. Based on our assessment, we classify one funding scheme to support knowledge transfer while four funding schemes support co-production of knowledge.

Chapter 5 draws conclusions. According to our assessment, the PAMS funding scheme is designed according to the principles of co-production of knowledge. PAMS principles and procedures follow principles of co-productivity with reference to 1) positioning the funding scheme at the science–society interface, 2) project definition, 3) project implementation and 4) project outcomes. The stage of project definition has shortcomings mainly because users are not required to submit the project together with their academic partners. The comparison of PAMS with the other funding schemes showed that PAMS has the most to learn from the R&D Funding by CTI. That is the format that proved to be best practice.

Chapter 6 presents three recommendations on how to develop the PAMS approach in future. The recommendations refer firstly to the **future design of funding schemes** along the lines of co-productivity, secondly to the **context in which co-productive collaboration between researchers and users makes sense**, and thirdly, to the **broad range of forms of learning across academic boundaries** beyond a project setting.

1 Introduction

Generating a benefit for society is increasingly required by research funding agencies. But researchers who engage with societal partners are often confronted with a paradox. They are expected to collaborate with non-academic partners, but are not funded for the additional work. As Sonia Talwar and her colleagues rightly say, many funding agencies are not "aware of the need to contribute to the structural changes required in order to seize the full potential of highly interactive … research" (Talwar et al 2011, p. 388). By structural changes the authors mean that an enabling environment is required, for researchers and their non-academic partners to meet, discuss, learn from each other, and find solutions. An enabling environment is established when there are sufficient resources in terms of time, money, skills, and networks.

Right from the start, the NCCR North-South introduced an innovative funding scheme to create an environment for collaboration between researchers and research users: Partnership Actions for Mitigating Syndromes of Global Change (PAMS). This report is concerned with the principles and procedures of PAMS.[1] We wanted to find out what types of interaction between academic and non-academic stakeholders are supported by PAMS. To this end, we assessed the PAMS framework with reference to the latest literature on user engagement in research, and compared it with similar funding schemes.

1.1 Partnership Actions for Mitigating Syndromes of Global Change (PAMS)

According to the NCCR North-South principles, Partnership Actions for Mitigating Syndromes of Global Change (PAMS) are small participatory projects of limited time and financial scope, designed to ensure that research results are tested for their practical use. In a joint endeavour, researchers and societal partners develop and test new ideas to solve concrete problems of societies, mainly in developing countries. Three goals are pursued with the PAMS feature.

1. **Transdisciplinarity:** Transdisciplinarity is a particular research approach that fosters the joint production of knowledge by those who best know how to find solutions: i.e. stakeholders with a scientific background and actors with practical experience of problems on the ground. Under this approach, research takes place in cooperation with academic and non-academic stakeholders – farmers, local leaders, parliamentarians, etc. – at each stage of the research process, from problem definition to formulation of recommendations (Hirsch Hadorn et al 2008). PAMS aim at contributing conceptually to the transdisciplinary approach of the NCCR North-South.

1 We would like to thank Albrecht Ehrensperger, Cordula Ott, Flurina Schneider, and Urs Wiesmann from CDE, Christian Pohl from td-net, Maddalena Tognola from euresearch, Alain Tanner from KTI, Simon Hearn from ODI, Eloise Stott from Knowledge Exchange group at ESRC, Elisabeth Schenker and Zoe Urech from SNF as well as Dominique Rychen from SDC for their valuable contributions to our evaluation.

2. **Societal learning:** PAMS aim at initiating learning processes between researchers and non-academic partners, both on the individual and institutional level. Social learning is understood as "a process of negotiation, communication and perspective sharing, with the aim of understanding problems and reaching a joint solution" (Heim et al 2011, p. 11)

3. **Mitigation:** PAMS identify, describe, and test solutions for overcoming problems of unsustainable development. PAMS should generate knowledge for decision support and tools for stakeholders to work towards sustainable development (Hurni et al 2004).

These goals are far from exclusive. They merge with the objective of the NCCR North-South to create knowledge for sustainable development. The sustainability goal includes connecting researchers and non-academic stakeholders, learning from each other, and finding solutions for mitigating problems of unsustainability.

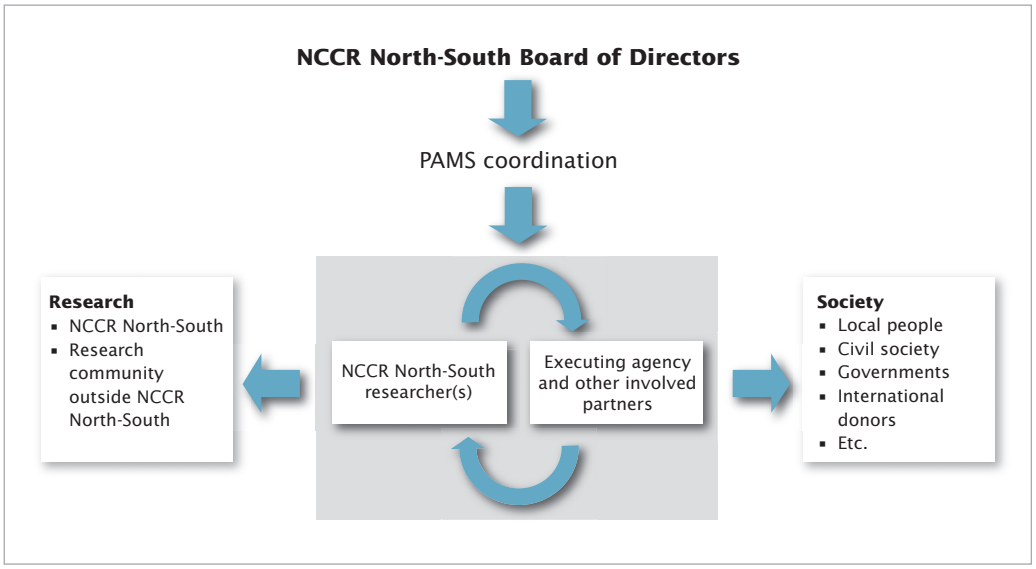

Figure 1: Structure of PAMS.

The goals of the programme are reflected in the structure of PAMS (Figure 1). The NCCR North-South Board of Directors is the deciding body and the PAMS coordinator administers the implementation.[2] NCCR North-South researchers submit and carry out the PAMS projects, in collaboration with an executing agency. Their project must be linked to an ongoing NCCR North-South research project. It should also be linked to non-academic stakeholders, such as farmers' organisations, parliamentarians, or development projects.[3]

PAMS are meant to support people not directly involved in the implementation of the projects. An example highlights this: two PAMS in the upper Ewaso Ngiro river

2 The Board of Directors consists of head representatives of the institutional partners at Swiss universities as well as Regional Coordinators.
3 For more information on the PAMS framework, see also Chapter 4.

catchment in Kenya were part of an initiative for sustainable water management in the larger Mt. Kenya region. Strategic partnerships with the Ewaso Ngiro North catchment office and other important stakeholders, such as the Water Resources Management Authority (WRMA) and the Laikipia Wildlife Forum (LWF), contributed to the success and sustainability of these projects.[4] At the same time, PAMS should also have an effect on the research community beyond the NCCR North-South.

PAMS projects were carried out from the start of the NCCR North-South. In the 12 years of the programme, 102 PAMS were implemented in the partner regions, with a total budget of CHF 3.5 million. An internal evaluation was conducted every four years, with the aim of better understanding the strengths and weaknesses of the funding scheme, and adjusting the programme to incorporate lessons learnt.

PAMS is a funding scheme established within the framework of the Swiss National Centre of Competence in Research (NCCR) North-South, a transdisciplinary partnership programme involving Northern and Southern universities and research institutes, on the topics of global change and sustainable development.[5] The NCCR North-South scholars are dedicated to user engagement both conceptually and practically. For example, they developed guidelines for transboundary research partnerships together with academic and non-academic partners, with helpful suggestions for how to translate scientific knowledge into practice (KFPE 2012).

1.2 Monitoring Research Effectiveness of the NCCR North-South (MORE)

This study is part of the NCCR North-South series "Monitoring Research Effectiveness" (MORE). This series of reports takes up topics of general interest and provides information on current debates on research evaluation and transdisciplinary research. MORE is a self-assessment and learning approach that aims at enhancing researchers' understanding of the various effects of their activities. The first report introduced our understanding of impact and provided for the first time an overview of 23 exemplary societal outcomes of the NCCR North-South (Michel et al 2010). The second report (Heim et al 2011) was dedicated to PAMS. It was an internal evaluation of the effectiveness and efficiency of the PAMS projects carried out between 2006 and 2010. The third report tracked the effect of the programme on the careers of 83 NCCR North-South alumni (Heim et al 2012). The fourth report (Michel et al 2013) explained the NCCR North-South approach on how to maximise impact. The fifth and final report – this one – focuses on the adequacy of the PAMS principles and procedures for enabling interaction between researchers and research users.

4 More information on these PAMS can be found on the website of the NCCR North-South: http://www.north-south.unibe.ch/content.php/page/id/307; retrieved 16 April 2013.

5 Detailed information on the NCCR North-South can be found on the website: www.north-south.unibe.ch; retrieved 1 May 2013.

A central term that needs to be defined in this report is outcome: "Outcomes are defined as changes in the behaviour, relationships, activities, or actions of the people, groups and organizations with whom a program works directly" (Earl et al 2001, p. 1). Our understanding of outcome is based on Outcome Mapping, an approach for planning, monitoring, and evaluating social change as established by the International Development Research Centre (IDRC) in Canada. We also refer to the Rapid Outcome Mapping approach (ROMA) of the Overseas Development Institute (ODI). The ROMA approach translates Outcome Mapping from the field of international development to the issue of informing policy and practice with scientific evidence.

1.3 Aims and scope of this report

This report is the third evaluation of PAMS, and was conducted at the end of the lifespan of the NCCR North-South. We want to look at PAMS from the perspective of the current literature on transdisciplinarity and user engagement in research. The main characteristic of transdisciplinarity is the collaboration between researchers and research users, often described as co-production of knowledge between academic and non-academic stakeholders.

The **aim of the evaluation** is, firstly, to assess the value of PAMS as a funding scheme for co-production of knowledge, against the backdrop of the current literature on transdisciplinarity and user engagement in research. Second, the evaluation aims at recommending options for adapting PAMS to new contexts in future by comparing it with similar funding schemes of other universities, research programmes, or projects.

The **guiding questions** of this evaluation are:

1. Do PAMS enable co-production of knowledge between academic and non-academic stakeholders?
2. Do similar funding schemes enable co-production of knowledge? What can PAMS learn from these funding schemes?

This study tries to contribute to the literature on transdisciplinarity and user engagement in research. It responds to the scholars who argue that the growing demand by funding agencies for research to create societal impact is insufficiently backed by structural support. At the level of content, it assesses the quality of the NCCR North-South funding scheme PAMS in comparison with similar funding schemes in Switzerland and internationally.

Our evaluation focuses strictly on funding schemes that provide resources for research–user collaboration. This means that many interesting research programmes are excluded. For example, there are many Swiss and EU research programmes which include promising possibilities for research–user engagement, but are mainly research funding schemes. While this could be conceived as a limitation of the present study, it also gives us clear criteria for delimiting the scope of the evaluation. Further, the evaluation examines the procedures of the PAMS. We could also have evaluated the

PAMS framework based on the experiences of those involved in the management of the PAMS programme and the PAMS projects. However, this type of evaluation was carried out in 2010, at the end of Phase 2 of the NCCR North-South (Heim et al 2011), and the results of the last evaluation also apply to the third phase of the NCCR North-South. Therefore, we refrained from repeating it. Finally it is important to note that this is an internal evaluation. Our aim is to better understand the effects of PAMS in order to improve similar funding schemes in future.

2 Conceptual Background

2.1 Research paradigms supporting research–user collaboration

The principles of PAMS are based on theories of transdisciplinarity as developed by scholars of the German-speaking school of transdisciplinary research (Hirsch Hadorn et al 2008; Pohl and Hirsch Hadorn 2007). Transdisciplinarity refers to a research paradigm different from basic research or applied research. It is oriented towards problems characterised by complexity and uncertainty such as international migration, health, poverty, and global environmental change. "[T]ransdisciplinarity implies that the precise nature of a problem to be addressed and solved is not predetermined and needs to be defined cooperatively by actors from science and the life-world. To enable the refining of problem definition as well as the joint commitment in solving or mitigating problems, transdisciplinary research connects problem identification and structuring, searching for solutions, and bringing results to fruition in a recursive research and negotiation process" (Wiesmann et al 2008).

Transdisciplinary research aims at contributing to science with new findings and to society with practical solutions for persistent and complex problems. It involves academics from different disciplines as well as non-academic stakeholders. All actors contribute to the research process from the very beginning. Stakeholders with a scientific background and actors with practical experience of problems on the ground meet and exchange on how to understand, approach, and solve the problem.

The goal of collaboration between different stakeholders is social learning. According to Rist and his colleagues, social learning initiatives strive for "participatory processes of social change underpinned by a theoretical framework in which social processes are defined as *non-linear* and *non-deterministic.* Social learning-based initiatives are essentially non-coercive and their contents are open to collective agreement" (Rist et al 2007, p. 26). This means, as explained in the same article, that actors negotiate the transformation of the norms, rules, and power relationships.

Social learning is also known as co-production of knowledge. Both terms emphasise the joint creation of knowledge across boundaries. Scholars using co-production of knowledge emphasise the process of and conditions for interaction (co-production) rather than the result (learning and change). For example, Sonia Talwar and her colleagues use co-production of knowledge when explaining different stages of interaction in social research (Talwar et al 2011). We use the two terms synonymously in this paper but draw more often on co-production, as the focus of our evaluation is on conditions for collaboration in PAMS.

2.2 Types of research–user collaboration

While all transdisciplinary research is oriented towards research–user collaboration, not every research project applies the principles of collaboration equally. We particularly refer to Sonia Talwar and colleagues who differentiate between four phases of possible collaboration (Talwar et al 2011). Collaboration can take place (Figure 2):

1. **At the stage of defining the problem:** The first phase defines the orientation of the research project towards societal and scientific problems. To truly orient the research project towards real-world problems it is essential to define the core research process in collaboration with academic and non-academic partners.

2. **At the stage of designing a research strategy:** Questions of choosing methods, sequencing steps, and structuring interactions are key during this phase. Very often, methodological aspects are scientists' business. But methodological choices influence results. Therefore, it may be important to jointly agree on how to generate and analyse data.

3. **At the stage of creating results:** Roles for practitioners and researchers are collectively defined and research methods applied to generate knowledge.

4. **At the stage of applying research:** The fourth phase is in addition to classical research processes as it specifically addresses questions of how to apply research results in science and society. It is about integration of knowledge, the generation of products for both audiences, issues of evaluation and impact, and more activities at the science–society interface for putting research into use.

Sonia Talwar and colleagues propose an interesting typology of user engagement strategies. Depending on the depth of research–user collaboration, they distinguish between weaker and stronger types of engagement.

The vertical line of the user engagement typology lists different types of user engagement in research. Type 1 and 2 are of low engagement being unidirectional or communicative rather than interactive types of engagement. The interactive research types 3 and 4 more thoroughly apply principles of user engagement. Therefore, the authors classify Type 3 and 4 as models of co-production of knowledge.

The claim for a high quality of research–user collaboration implies a high degree of integration of all stakeholders involved. The authors conclude that interactive research projects often cannot tap the full potential of user engagement, for organisational and institutional reasons. "That individual researchers or research teams have been able to establish ISR [interactive social research] projects is often testament to the entrepreneurial or visionary nature of the individual researchers (and sometimes of the funding programmes) rather than the organizational setting of the researchers or users" (Talwar et al 2011, p. 289). Based on their experience, the authors call for research on institutional arrangements and organisational settings necessary to successfully engage with non-academic stakeholders.

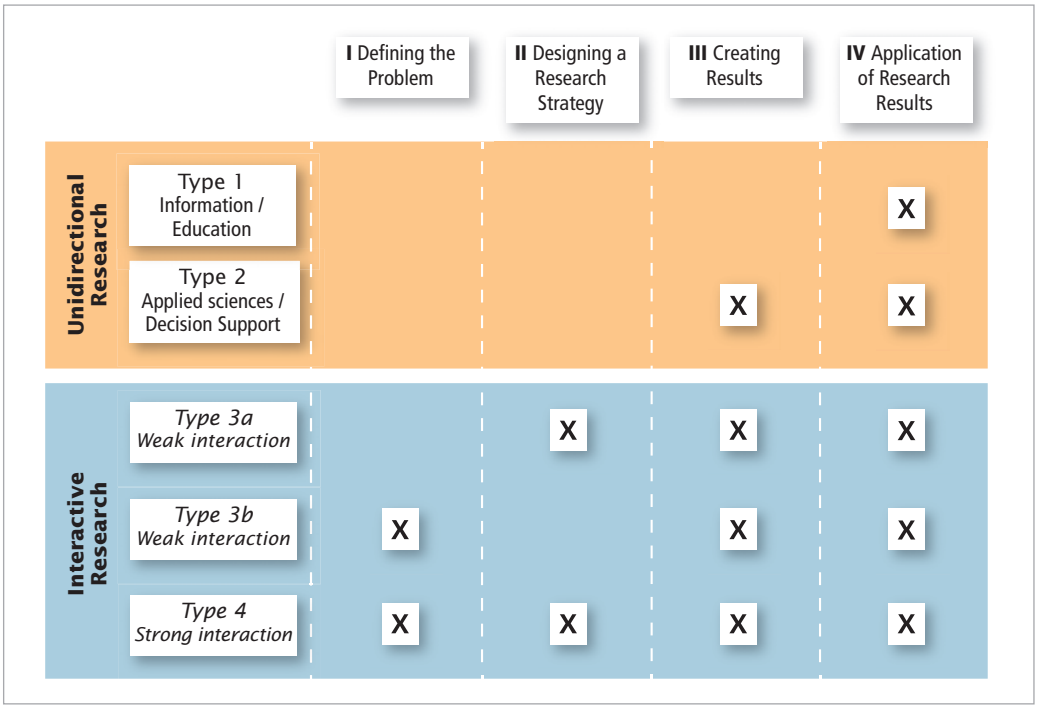

Figure 2: Typology of user engagement (adapted from Talwar et al 2011). Crosses indicate when collaboration between academic and non-academic stakeholders takes place. Types 1 and 2 are classified as unidirectional research, Types 3 and 4 are interactive research.

2.3 Funding schemes for collaboration

For actors to be able to learn collectively they need learning spaces, as well as situations open to the expression of different world views, reflection on values, and collective learning. In the context of this study, we examined funding schemes that are designed for financing research–user collaboration. Our aim is to understand whether and how these create conditions for the co-production of knowledge.

Among the existing funding schemes, the majority is designed for technically and commercially driven collaboration. These target economic impact and are limited to the realm of science and technology (S&T). David Phipps and Stan Shapson argue that academic institutions in the US have been supporting university–industry partnerships through technology transfer, since the eighties (Phipps and Shapson 2009). From these origins, a worldwide trend started to establish a university-based industry with the aim of maximising the economic impact of mainly S&T research. Other possible fields of research uptake are neglected. The authors particularly deplore the lack of attention given to the social sciences and humanities. But their criticism is generally true for non-technical and non-commercial themes such as many of the topics treated in PAMS.

To maximise the broad societal impact of research, the authors argue that institutional capacity is needed to develop services that enhance the connection between researchers and research users. They refer to the experiences made by the Knowledge Mobilization

(KM) Unit, a service of York University in Canada offering institutional capacity to support research–user collaboration. The KM Unit applies methods of knowledge transfer, exchange of knowledge, or co-production of knowledge (Figure 3):[6]

- Knowledge transfer: initiatives uniquely carried out by researchers or research users (producer pull, user push) such as for example writing a reader-friendly research summary or seeking a research partner to solve a practical problem.
- Knowledge exchange: is based on a short-term two-way interactive approach such as for example during a workshop.
- Co-production of knowledge: is based on a medium-term two-way interactive approach. It includes the fostering of continuous exchange among researchers, providing funding schemes for collaboration, and exchange of personnel.

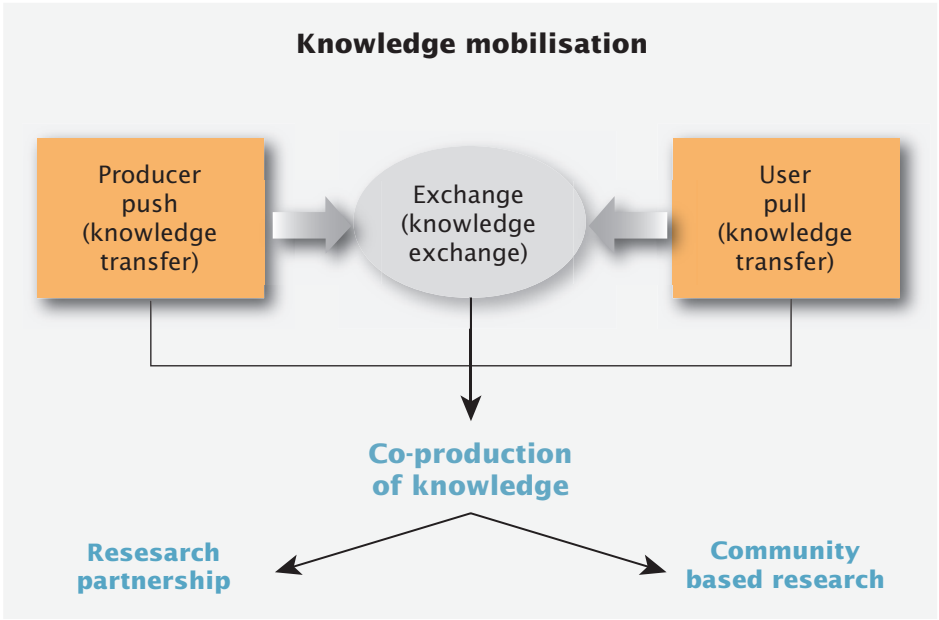

Figure 3: Knowledge Mobilization Unit of York University, Canada. Knowledge mobilisation has elements of producer push, user pull, knowledge exchange, and co-production of knowledge (adapted from Phipps and Shapson 2009).

We conclude the chapter with an overview of the relevant arguments influencing our study. The literature on transdisciplinarity and other research paradigms introduce user engagement as a way to approach complex and uncertain problems. The collaboration between academic and non-academic stakeholders is sought in order to co-produce knowledge, to learn from each other, and to initiate changes in science and society. We

6 See also the "Guide for Transboundary Research Partnerships" by the Swiss Commission for Research Partnerships with Developing Countries (KFPE): http://www.kfpe.ch/11-Principles/; retrieved 1 May 2013.

take from Sonia Talwar and colleagues the differentiation of phases for collaboration and their typology of research–user collaboration. Further we are inspired by the experience of York University in offering funding schemes and services for collaboration. The differentiation of two types of collaboration by David Phipps and Stan Shapson – knowledge transfer and co-production of knowledge – is adopted in our evaluation. Concluding the conceptual part of this study, we define three central terms:

- **Researchers:** designates academics associated to universities or research institutes dealing with issues from a scientific perspective.

- **Users:** includes a broad range of actors participating in research projects from a policy or practice perspective or benefiting from research. Users are a heterogeneous group that is defined according to the context. Users may be defined very broadly as society, public, end-users, or more narrowly as media experts, NGOs, executing agencies or firms.

- **Collaboration:** describes the engagement between researchers and users. Collaboration may take place unidirectionally from researchers to users or vice versa, or it may also be interactive between the two groups.

3 Methods

Two methods were applied for collecting and analysing the data: document analysis and personal interviews. These methods complemented each other, delivering the information necessary for the evaluation. The interviews helped us to gain insights where the written information did not provide enough details.

3.1 Data

Based on an electronic search and a request in relevant communities of practice, funding schemes were identified as objects of comparison.[7] Our aim was to compare PAMS with two to five similar funding schemes. We collected information about these tools available electronically: on websites, in reports, or from peer-reviewed papers. Further, we conducted expert interviews with key persons responsible for funding schemes in SNF, euresearch, and KTI.

Three selection criteria were applied to identify relevant objects to compare with PAMS. These were:

1. It must be a **funding scheme**.[8]
2. Its main goal is **collaboration between academic and non-academic actors.**
3. It is **not exclusively oriented towards technical or commercial goals.**

Based on the selection criteria, the following funding schemes were selected:

1. **Research and development (R&D) funding** by the Commission for Technology and Innovation (CTI) of Switzerland which aims at contributing to the national economy and value creation

2. **Small grants for innovative research and knowledge sharing** by the Canadian Partnership Programme (CP) of the International Development Research Centre (IDRC) which strives to strengthen the capacity of the Canadian international development and research community to carry out research and knowledge-related activities, with the potential to influence policy and practice

7 We are grateful for the feedback from the electronic communities "evidence-based policy in development network" (epdn: http://www.ebpdn.org; retrieved 17 April 2013) and "Knowledge Management in Development" (KM4Dev: http://www.km4dev.org/; retrieved 17 April 2013).

8 We refer to the definition of the European Commission: "The funding schemes structure the way projects are submitted in response to a call for proposals and funded within a grant agreement. The funding schemes may stipulate inter alia the types of activities which are supported, the nature and number of eligible participants, the mode of partnership between the participants and the provisions for the use and ownership of the research results" European Commission 2013a. A new funding scheme for the active participation of civil society organisations in research. Research for the benefit of specific groups − Civil Society Organisations (BSG−CSO).2. Available from: http://ec.europa.eu/research/science-society/document_library/pdf_06/bsg-cso-scheme_en.pdf.

3. **Agora** by the Swiss National Science Foundation (SNSF) which aims at fostering knowledge about science in the public at large and enhancing the dialogue between researchers and society

4. **Research for the Benefit of Specific Groups – Civil Society Organisations (BSG–CSO)** by the European Commission which targets developing scientific knowledge related to CSO activities in order to contribute to public debate, and invites CSOs and research organisations to form partnerships and combine their knowledge

The analysis is based on documents available online such as principles and procedures, guidelines, legal texts including regulations, application forms, and call documents. Expert interviews conducted with key persons responsible for funding schemes in SNF, euresearch, and CTI further provided complementary information. Additional information such as web content, annual and other reports, presentations, and details on projects funded by the respective schemes was used for the portraits in Chapter 4 and in Annex 1.

3.2 Analysis

For evaluating PAMS and similar funding schemes we developed a typology for research–user collaboration (Table 1). The typology indicates whether the funding scheme has the potential to enable knowledge transfer or co-production of knowledge. On the horizontal line of the typology, the first column provides information on the position of the funding scheme at the science–society interface. It assesses possible requirements for linking the project to research- and user-related activities. The next three columns provide information about the participatory design of the phases of the project cycle. Requirements for participatory collaboration in the phase of defining and implementing the project as well as for defining outcomes are assessed. On the vertical line we distinguish between knowledge transfer and co-production of knowledge. Mainly unidirectional forms of collaboration are classified as knowledge transfer; interactive forms of collaboration are called co-production of knowledge.

	Position of project and phases of project cycle			
	Position of project at science–society interface	Project definition	Project implementation	Project outcomes
Knowledge transfer				
Co-production of knowledge				

Table 1: Typology of research–user collaboration.

For each column we developed a set of questions in order to specify the role of the funding scheme or the involved people (Table 2). Most importantly, the relation between researchers and research users was clarified. These were the questions:

Position of project at science–society interface	Project definition	Project implementation	Project outcomes
Question 1: Is the project to be linked to research projects and user projects?	Question 2: Is the content of the projects (problem, aims) to be defined by researchers and users? Question 3: Is the project to be submitted by researchers and users?	Question 4: Are interactions between researchers and users required? Question 5: Are the activities to be carried out by researchers and users? Question 6: Are the activities to be defined by researchers and users?	Question 7: Are the project outcomes to be defined by researchers and users? Question 8: Are project outcomes to be defined for researchers and users?

Table 2: Guiding questions for assessing the funding schemes.

Depending on the answers we appraised the funding scheme as having the potential to enable knowledge transfer or co-production of knowledge. If at least one of the questions per column is answered positively but others negatively, we classify the column as positive in brackets (X). If all questions are answered positively (or if there is only one question which is positive), the column gets an X without brackets. If a funding scheme is assessed positively (X with or without brackets) in at least 3 of the 4 columns, we consider it to be designed according to the principles of co-production of knowledge. If the assessment is positive in only one or two columns, we classify it to be based on principles of knowledge transfer.

It must be noted that it was not always possible to obtain clear answers based on the available data. The principles, submission forms, and guidelines related to the funding schemes are of uneven extensiveness. Some have explicit instructions with respect to interactions between researchers and users; others are open to the form of interaction the applicants choose. Therefore, we assessed the funding schemes not only on the basis of the answers given, but also – qualitatively – on the basis of the text.

4 Results

The first part of Chapter 4 introduces and assesses the Partnership Actions for Mitigating Syndromes of Global Change (PAMS) as a funding scheme of the NCCR North-South for connecting researchers and users, and for addressing problems of unsustainability. In the second part, PAMS are compared with similar funding schemes.

4.1 Evaluation of PAMS

Portrait of PAMS as a funding scheme

Content of scheme	Within the NCCR North-South, PAMS are a very specific feature designed to foster the co-production of knowledge by researchers and societal actors. In a joint endeavour, researchers and their partners develop and test new ideas to solve concrete problems of societies in developing countries. This vision is reflected in the three PAMS programme goals: **1. Transdisciplinarity:** Researchers of different disciplines work together with non-scientific actors such as non-governmental organisations, ministries, local authorities, and civil society organisations, with the aim of finding solutions to problems of the world. **2. Social learning:** PAMS trigger learning processes between researchers and non-academic partners, impacting both science and society. Social learning is understood as a process of negotiation, communication, and perspective sharing, with the aim of understanding problems and reaching a joint solution. **3. Mitigation:** PAMS explore strategies and tools for mitigating the effects of unsustainable development.
Donor	NCCR North-South funded by SNSF, SDC, and participating research institutions
Embedding in superordinate funding structure	The NCCR North-South is a research programme in the fields of global change and sustainable development. Headquartered in Switzerland and encompassing a network of over 350 researchers active in more than 40 countries worldwide, it is dedicated to finding sustainable, practicable solutions to specific challenges of global change. Research is collaboratively conducted with a special emphasis on the needs of developing and transition countries.
Existence period of scheme	2001–2013
Scope of scheme	In the 12 years of the NCCR North-South programme, 102 PAMS were implemented with a total budget of CHF 3.5 million.

Operational structure

Application modalities	Submission of project proposals at least once a year in a standard format and with set deadlines (NCCR North-South 2009, p. 9).
Decision body	The NCCR North-South Board of Directors holds the decision-making power for selection and endorsement of project proposals (NCCR North-South 2009, p. 7).
Funding scope	Max CHF 50,000; follow-up projects based on insights acquired in a previous PAMS are an option (NCCR North-South 2009, p. 6).
Time frame	One-year, follow-up projects based on insights acquired in a previous PAMS are an option (NCCR North-South 2009, p. 6).
Thematic and regional focus	Projects may address any NCCR North-South research topic; a link to an ongoing research project is mandatory (NCCR North-South 2009, p. 3).
Admitted applicants	▪ NCCR North-South researchers identify possible projects and partner organisations (NCCR North-South 2009, p. 7), as the projects have to be linked to an ongoing research project within the programme. ▪ Partner organisations can originate from a wide range of interest groups such as community associations, research institutes, resource user groups, planners, policymakers, economic agents (e.g. cooperatives), projects or programmes, and public services (NCCR North-South 2009, p. 3).

Classification according to the typology of research–user collaboration

In the following, the PAMS funding scheme is assessed on the basis of the eight evaluation questions and classified according to the typology of research–user collaboration. The analysis is based on PAMS principles and procedures and does not consider the way the funding scheme was managed nor the experiences made in projects.

Position at science–society interface

Question 1: Is the project to be linked to research projects and user projects? Answer: Yes, partly.
Projects supported by the PAMS funding scheme must be linked to an ongoing research project of the NCCR North-South (NCCR North-South 2009, p. 3). Further, embedding the project into long-term user initiatives is highly recommended in order to ensure continuity and use of PAMS results beyond its lifespan. The principles and procedures are explicit on this point: "Since medium and long-term impact cannot be assured by a PAMS in itself, it should be sought through embedding the PAMS into larger […] development activities" (NCCR North-South 2009, p. 6).

Stage of project definition

Question 2: Is the content of the projects (problem, aims) to be defined by researchers and users? Answer: No.
Regional Coordinators, in cooperation with researchers of the NCCR North-South, identify possible projects and partner organisations for joint implementation (NCCR North-South 2009, p. 7). This puts researchers in an active role at the stage of project definition, while research users, acting as executing agency or participating in another

form in the project, play a more passive role. Yet, the project proposal must mention why an organisation is particularly competent to execute the required work and include a letter of interest (NCCR North-South 2010, p. 8).

Question 3: Is the project to be submitted by researchers and users? Answer: No.
The funding scheme does not require that both researcher and user submit a proposal. But for each project an executing agency is required. A letter of interest of the executing agency must be enclosed to the submission. Both academic and non-academic organisations including community associations, resource user groups, planners, policy makers, economic agents, and public services are considered as possible executing agencies (NCCR North-South 2009, p. 3). Further, the involvement of stakeholders and beneficiaries in the identification of the project has to be explained and described in the project proposal (NCCR North-South 2010, p. 8).

Stage of project implementation

Question 4: Are interactions between researchers and users required? Answer: Yes.
Activities provided with support of the PAMS funding scheme include "policy dialogue, cultural programmes, training courses, small-scale infrastructure improvements, or introduction of advanced technology" (NCCR North-South 2009, p. 3). Selection of "settings, methods and tools which enable and promote mutual learning" is considered fundamental (NCCR North-South 2009, p. 3). The funding scheme enables interaction with users at various levels: at the level of the executing agency, at the level of stakeholder involvement, and at the level of beneficiaries (NCCR North-South 2010, p. 9). The involvement of stakeholders and beneficiaries in the implementation of the PAMS has to be described in the project proposal (NCCR North-South 2010, p. 8) and is highlighted as "crucial for the learning process sought by the project" (NCCR North-South 2009, p. 5).

Question 5: Are the activities to be carried out by researchers and users? Answer: Yes, partly.
Projects are jointly implemented by one or several NCCR North-South researchers and an executing agency. Yet, the position of the executing agency is not exclusively restricted to representatives of users. It may also be a researcher acting as executing agent (see Question 3).

Question 6: Are the activities to be defined by researchers and users? Answer: No.
Explanation given in Question 2.

Stage of project outcomes

Question 7: Are the project outcomes to be defined by researchers and users? Answer: No.
Explanation given in Question 2.

Question 8: Are project outcomes to be defined for researchers and users? Answer: Yes.
A project funded within the PAMS scheme is explicitly meant to benefit both research and society. The proposal form requests to describe "how the PAMS will be embedded in ongoing initiatives such as other research programmes or development projects, with a view to ensuring continuity and utilisation of PAMS results beyond its lifespan" (NCCR North-South 2010, p. 8). Applicants are requested to reflect on the beneficiaries of the project in the project proposal. However, it must be noted that there is more information given on user outcomes compared to research outcomes. For example the possible beneficiaries are characterised as "all those who benefit from or impact on solving problems in the JACS: local communities, governments, interest groups, etc." (NCCR North-South 2010, p. 8).

PAMS: Minimum requirements of the funding scheme				
	Position at science–society interface	**Definition**	**Implementation**	**Outcomes**
Detailed assessment	Q1: Yes, partly	Q2: No Q3: No	Q4: Yes Q5: Yes, partly Q6: No	Q7: No Q8: Yes
	Integration both into research and user projects is recommended, link to research project is mandatory	Strong role is intended for researchers only	Involvement of users is the minimum requirement, mutual roles are recommended	Scheme intends outcomes for researchers and users equally
Overall assessment	(X)	O	(X)	(X)

Based on the assessment, we consider the PAMS funding scheme to be designed according to the principles of co-production of knowledge. The assessment, however, makes clear that there is room for improvement. The funding scheme could more consistently follow the principles of co-productivity.

4.2 Comparison of PAMS with similar funding schemes

From the appraisal of PAMS we turn to the comparison of PAMS with other funding schemes. We compare PAMS with the following funding schemes:

1. **Research and development (R&D) funding** by the Commission for Technology and Innovation (CTI) of Switzerland which aims at contributing to the national economy and value creation

2. **Small grants for innovative research and knowledge sharing** by the Canadian Partnership Programme (CP) of the International Development Re-

search Centre (IDRC) which strives to strengthen the capacity of the Canadian international development and research community to carry out research and knowledge-related activities, with the potential to influence policy and practice

3. **Agora** by the Swiss National Science Foundation (SNSF) which aims at fostering knowledge about science in the public at large and enhancing the dialogue between researchers and society

4. **Research for the Benefit of Specific Groups – Civil Society Organisations (BSG–CSO)** by the European Commission which targets at developing scientific knowledge related to CSO activities in order to contribute to public debate, and invites CSOs and research organisations to form partnerships and combine their knowledge

Every funding scheme is assessed in detail. The details may be found in Annex 1. In the following the results of the assessment is summarised for each funding scheme:

- **Agora by SNF:** The position of a project financed by Agora at the science–society interface: There is a clear requirement to link the project to research activities, and there is no requirement to link the project to users' activities. Of the condition for the researcher is that they are associated with a university and have an ongoing research project (from a competitive funding scheme). There is no requirement to link the ongoing research project and the proposed Agora project thematically. Researchers alone are responsible for defining the project, its implementation, and outcomes. They may be supported by communication specialists or knowledge brokers. Finally, outcomes are foreseen for users only. We judge the funding scheme to be oriented towards the principles of knowledge transfer, designed to sensitise the public to research topics.

- **PAMS by NCCR North-South:** The position of a project financed by PAMS at the science–society interface: a link is required on the part of both researcher and user; while the link to a research project is mandatory, the link to an ongoing user activity is recommended. At the stage of project definition, the role of researchers is clearly dominant, because only researchers are expected to submit a proposal. Users, however, are not excluded from co-defining the project. At the stage of implementation, a balanced sharing of roles between researchers and users is intended. Finally, at the stage of outcomes, the funding scheme foresees outcomes for both researchers and users with a stronger emphasis on users' outcomes. For these reasons, we qualify PAMS to support co-production of knowledge, albeit with a tendency to push knowledge from research to policy and practice.

- **R&D Funding by CTI:** The position of a project financed by CTI at the science–society interface: no direct links to research or use are required. Yet, the competency of the applicants is judged based on former research and user projects. Further, the research applicants must be associated with a university or research institution, and the users must be registered in the Swiss commercial

register. At the stages of project definition, implementation and outcomes, the funding scheme puts a strong emphasis on a balanced collaboration between researchers and users. With the last two stages, the role of user is growing in importance and requirements for users' outcomes are more explicitly specified. We qualify the funding scheme as an excellent example of how to foster co-production of knowledge. Interestingly, knowledge transfer from research into use is an explicit goal of the funding scheme, yet its design is based on principles of co-production.

- **CPP small grants by IDRC:** The funding scheme "small grants for innovative research and knowledge sharing" by IDRC is characterised by a low level of prescription in the collaboration between researchers and users. Most importantly, researchers and users are not strictly distinguished. For these two reasons, the classification of the funding scheme according to our typology is difficult. There is no strong prescription made with regard to the position of the project at the science–society interface. At the stage of project definition we assume that the content is defined together, but only one organisation can submit a project proposal. At the stage of project implementation, we assume that activities are jointly defined and interactions between researchers and users are foreseen, but there is no joint responsibility for the implementation. For the stage of project outcomes we believe that co-productivity is prescribed with regard to defining research and user outcomes as well as with respect to who defines outcomes (researchers and users). For these reasons we classify the funding scheme as supporting the co-production of knowledge, albeit with a very low level of prescription made.

- **BSG–CSO:** The BSG–CSO funding scheme by the European Commission is a challenge to classify. Prescriptions are call-dependent and in general little prescription is made. In spite of these difficulties, we classify the funding scheme as being based on principles of co-productivity. The position of the project at the science–society interface is not specified. With regard to the different stages of the project cycle, the content of the projects are jointly defined by researchers and users, with users (in this case civil society organisations) expected to be more active in searching for a partnership. A high degree of interaction is expected at the stage of implementation. Researchers and users jointly define the activities, are responsible for implementation, and interact with each other. At the stage of outcomes, the funding scheme also has a tendency towards user pull. Project outcomes are defined by researchers and users, but outcomes are only defined for civil society and not for academia.

With the exception of Agora – which is classified as an example of knowledge transfer – we consider all funding schemes to adhere to the principles of co-production of knowledge (Table 3).

	Funding scheme	Position of project at science–society interface	Project definition	Project implementation	Project outcomes
Knowledge Transfer	Agora	O	O	(X)	O
Co-production of knowledge	PAMS	(X)	O	(X)	(X)
	R&D/CTI	O	X	X	X
	CPP small grants/ IDRC	O	(X)	(X)	(X)
	BSG–CSO	O	(X)	X	(X)

Table 3: Classification of funding schemes according to typology of research–user collaboration.

In a second step we refine our classification of funding schemes. The refinement is based on a qualitative analysis of the available texts: the principles and procedures, application forms, and guidelines. Further, we characterise the funding schemes more precisely by comparing them with each other. In the following, the funding schemes are ranked for each stage of collaboration:

- **Position at science–society interface:** PAMS is the funding scheme by far the most oriented towards co-productivity of knowledge. The link to research – an ongoing PhD project – is mandatory, while the link to an ongoing user activity is highly recommended. R&D Funding by CTI requires a balanced link to research and use, but this is much less specified than in the PAMS. In the case of BSG–CSO funding we diagnose a user pull: the project is clearly positioned on the side of the user, with civil society organisations expected to take part in FP7 research through the funding scheme. There is a low level of prescription made for the CPP small grants by IDRC. Finally, Agora prescribes a strong link to research, namely to an ongoing research project, but the two projects need not be connected content-wise. The link to use is irrelevant for Agora – a clear sign of knowledge transfer (research push).

- **Project definition:** We consider R&D Funding by CTI to be the funding scheme with the strongest requirements towards co-production of knowledge, as it requires partners to define the project and to submit the proposal collaboratively. The requirement for PAMS is much less balanced, as only researchers are allowed to submit the proposal. Further, there is no demand but an option for collaboratively defining the proposal. With regard to the BSG–CSO the partners may but need not collaboratively submit the project proposal. In any case, a tendency towards favouring users is the explicit strategy of the funding scheme. CPP small grants by IDRC seem to be jointly defined by researchers and users, but at a low prescription level. Again, for Agora, the stage of project definition is almost entirely defined by academic criteria: researchers define and submit the projects.

- **Project implementation:** R&D Funding by CTI together with BSG–CSO are rooted in the principles of co-production of knowledge as researchers and users jointly define the steps of implementation, are both responsible for implementing the project, and closely interact during the project implementation. In the case of the R&D funding by CTI, no formal prescription is made, but our assessment can be derived from the overall setting of the project design. A slight tendency towards empowering users must be noted: generally, the formal project management is recommended to be in the hands of the user. In the case of PAMS, strong interaction between the partners is a minimum requirement and balanced collaboration is recommended. However, the users' right to define implementation activities is not formally guaranteed. In the case of Agora, only researchers – supported by communication specialists – are expected to actively implement the project. The CPP small grants by IDRC is again the funding scheme with the lowest level of prescription.

- **Project outcomes:** The R&D Funding by CTI is most oriented towards co-production of knowledge at the stage of outcomes, though not as much as at the stage of defining and implementing the project. Both researchers and users define outcomes for both research and use. But outcomes for use are more emphasised. In contrast, the PAMS scheme intends outcomes for both sides equally. Paradoxically, users are not involved in the definition of outcomes on an equal footing with researchers. The BSG–CSO funding scheme allows researchers and users to jointly define outcomes. But only users' outcomes are of interest as the funding scheme is designed for the benefit of civil society organisations. The CPP small grants by IDRC puts a strong emphasis on learning outcomes, either by researchers or users. Particularly the research-related outcomes (improving research and research-related collaboration) are probably more interesting for researchers. In the case of Agora, researchers define outcomes for use. No outcomes benefiting research are expected.

The following graph maps each stage of the funding scheme in relation to academic and user-related prescriptions (Figure 4).

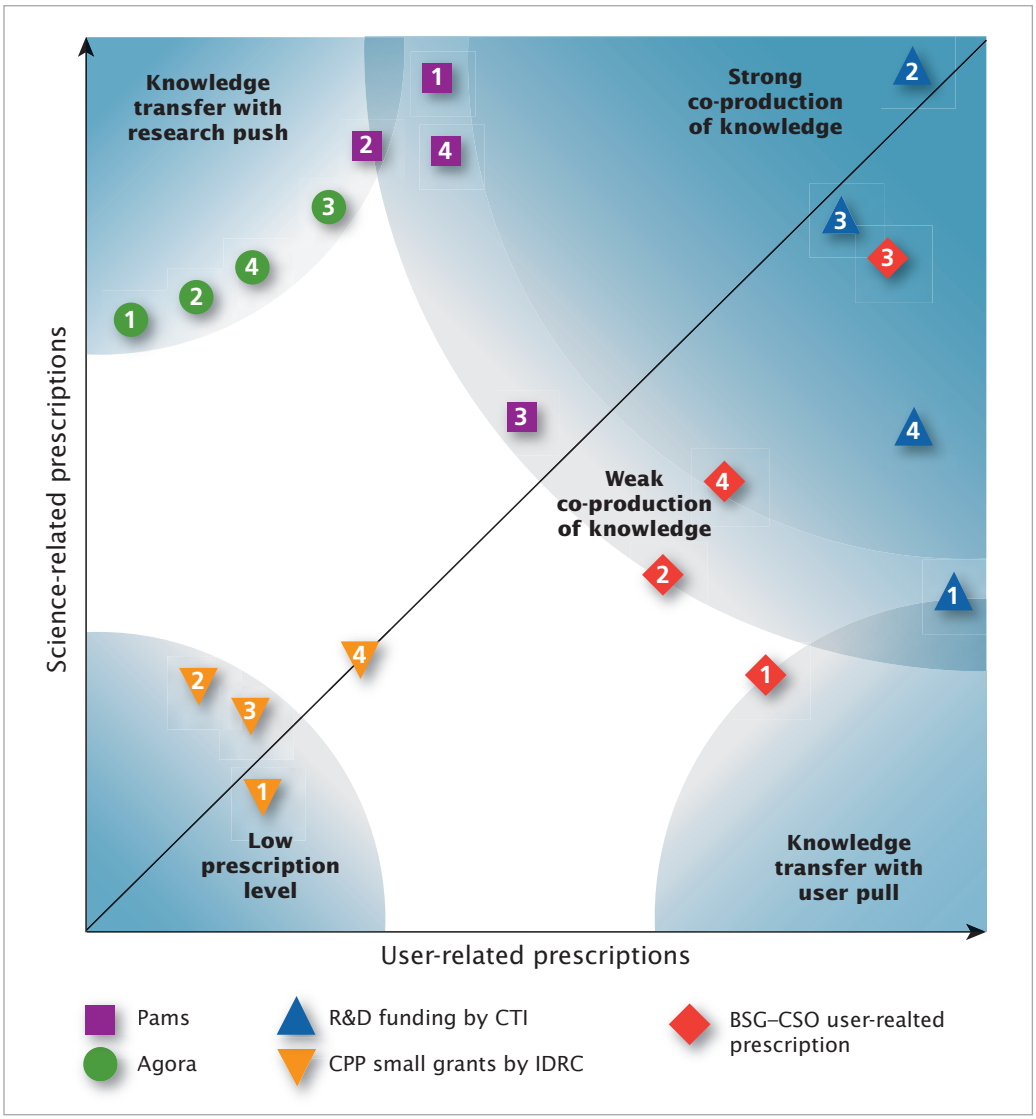

Figure 4: Position of funding schemes according to their science-related and user-related prescriptions. Each numbered shape represents a phase of the project cycle and its relation to research- and user-related prescriptions. The numbered shapes in the upper right corner represent strong forms of co-production of knowledge.

The result of our assessment is that CTI represents the strongest model for co-production of knowledge. Three out of four stages are strongly rooted in principles of co-production of knowledge. This is surprising because representatives of the Commission for Technology and Innovation, the funding institution of the CTI projects, perceive the funding scheme to be used for knowledge transfer. Co-production of knowledge has no value for the funding scheme. Instead, the funding scheme is result-oriented: bringing scientific innovations to the market is the explicit goal. Our assessment shows that for transforming scientific innovations into marketable products, a process of co-production of knowledge is necessary.

PAMS is strongest at positioning the project at the science–society interface. The clear requirement of the guidelines to link the project with ongoing research and user activi-

ties may be explained by the fact that PAMS provide relatively small amounts of money compared to other funding schemes.[9] A PAMS project alone is too small to effect big changes, therefore, it is necessary to link the project with other research and user activities in order to join forces. This is a practical reason but it has a positive impact on the potential of the project to enable co-production of knowledge: the project must be set in line with additional activities, therefore, requiring a higher degree of integration between research and practice and raising the chances for sustainable effects. The three stages of the project cycle – project definition, implementation and outcomes – are less oriented to co-production of knowledge compared to the R&D Funding by CTI. Generally speaking, all PAMS stages tend to be characterised by a soft researcher pull; researchers clearly have a stronger say compared to users. Consequently, all PAMS-related points in the graph in Figure 4 are above the line of co-productivity.

Another interesting example is the BSG–CSO funding scheme by the European Commission. As far as we can judge, it seems be the opposite of PAMS: relatively well on track with regard to co-production of knowledge, but with a soft user pull. All BSG–CSO-related dots are below the line of co-productivity, and users have clearly a stronger say compared to researchers. Agora is an example of knowledge transfer with a strong researcher pull. The CPP small grants by IDRC is difficult to classify but characterised by a low level of prescription.

9 PAMS: CHF 50,000 max; Agora: CHF 200,000 max; CTI: CHF 300,000 on average; IDRC: CAD 1,000–60,000; BSG–CSO: EUR 1.4 million on average.

5 Conclusions

Increasingly, research is required to generate benefits for society and the environment. This implies that researchers work together with research users in order to address complex and uncertain problems. But researchers are often confronted with a paradox. They are expected to collaborate with non-academic partners, but are not funded for the additional work. Collaborative research projects often cannot tap the full potential of user engagement for organisational and institutional reasons. Therefore, specific institutional and organisational conditions are necessary that foresee or even foster research–user engagement. Funding schemes are one possible solution.

Among the existing funding schemes the majority is designed for technically and commercially driven collaboration. But in order to address complex problems, the focus of an adequate funding scheme should be much broader. For actors to be able to learn collectively they need learning spaces as well as situations open to the expression of different world views, the reflection of values, and collective learning. Most importantly, researchers and users must be able to interact on equal terms, from the beginning of the problem definition and the implementation of the project, to the definition and use of outcomes. This form of collaboration is often known as co-production of knowledge. Being a transdisciplinary research programme, the NCCR North-South introduced, from the beginning, an innovative funding scheme for creating an environment for the collaboration between researchers and research users: Partnership Actions for Mitigating Syndromes of Global Change (PAMS).

This evaluation of PAMS aimed to assess the types of collaboration that PAMS support. It aimed to firstly evaluate the value of PAMS as a funding scheme for co-production of knowledge. Secondly, it aimed at recommending options for adapting PAMS to new contexts in future, by comparing it with similar funding schemes of other universities and research programmes or projects.

Methodologically, we selected funding schemes with a main focus on fostering collaboration between academic and non-academic actors on issues that are not exclusively oriented towards technical or commercial goals. The following funding schemes were selected and compared with PAMS:

- R&D Funding by the Commission for Technology and Innovation (CTI, Switzerland);
- the small grants for innovative research and knowledge sharing by the International Development Research Centre (IDRC, Canada);
- Agora by the Swiss National Science Foundation (SNSF); and
- Research for the Benefit of Specific Groups – Civil society Organisations (BSG–CSO, European Commission).

All funding schemes were evaluated with reference to 1) their position at the science–society interface; and with reference to the collaboration they fostered 2) in the phase of the project definition, 3) the phase of the implementation as well as 4) the phase of project outcomes.

The first question of the evaluation was whether PAMS enable the co-production of knowledge between academic and non-academic stakeholders. The evaluation showed this to be the case. The funding scheme of PAMS follows principles of co-productivity with reference to 1) positioning the funding scheme at the science–society interface 2) the project implementation and 3) project outcomes. But the stage of project definition has shortcomings mainly because users are not required to submit the project together with their academic partners. Compared with other funding schemes, PAMS proved to be the strongest at positioning the project at the science–society interface. The three stages of the project cycle – project definition, implementation, and outcomes – are less oriented to co-production of knowledge compared to the R&D Funding. All PAMS stages tend to be characterised by a soft researcher pull; researchers clearly have a stronger say than users.

The second question of the evaluation was whether similar funding schemes also enable the co-production of knowledge, and if there was something to be learned for PAMS. The following funding schemes were classified as formats for supporting processes of co-productivity: R&D Funding by CTI, BSG–CSO by the European Commission, and CPP small grants by IDRC. The SNSF's funding scheme, Agora, was classified as a format for transferring knowledge with a research push: researchers initiate a communication for sensitising the broad public on scientific concerns. The PAMS funding scheme has the most to learn from the R&D Funding by CTI, whose format proved to be best practice.

The report contributes to the literature on transdisciplinarity and user engagement in research. It presents and discusses funding schemes that fill an often-criticised gap, namely, that there is not enough organisational and institutional support for researchers to collaborate with non-academic partners. It shows that there are positive examples from which one could learn how to design funding schemes for the co-production of knowledge.

The scope of the evaluation is restricted to funding schemes. It could be expanded to other areas where knowledge is co-produced: to research programmes, to the organisational development of research institutes and universities, or to services for supporting research–user collaboration. The report at hand is based on a four-month short self-assessment, but its topic and the sample used could be developed in a detailed research study. Therefore, we end this chapter by encouraging researchers interested in the collaboration between academic and non-academic stakeholders to take up some of the results and engage critically with our arguments.

6 Recommendations

We conclude this report with three recommendations. The recommendations refer firstly to the future design of funding schemes based on principles of co-production of knowledge, secondly, to the context in which co-productive collaboration between researchers and users makes sense, and thirdly, to the broad range of forms of learning across academic boundaries beyond a project setting.

Recommendation 1: A future PAMS funding scheme should be designed more systematically towards principles of co-production of knowledge.

Co-production of knowledge is a principle for enabling researchers and users to jointly produce knowledge and to learn collectively. This is important for contributing to the solution of complex problems in uncertain circumstances. A future PAMS funding scheme may be strengthened by requiring:

1. A mandatory link of the project to user-related activities (e.g. projects, programmes, etc.);
2. That researchers and users jointly submit the research proposal; and
3. That researchers and users have an equal say in defining the project, its implementation, and outcomes.

Among the funding schemes of our evaluation in Chapter 4, the R&D Funding by CTI is best practice. The PAMS can learn from the CTI design particularly for the stages of project definition, implementation, and outcomes.

Recommendation 2: The form of research–user collaboration depends on the goal of the funding scheme and the users involved. A service unit should offer coaching during project submissions to ensure that the appropriate approach is chosen.

Co-production of knowledge is highly demanding for researchers and users, as well as time-intensive. These are two among various reasons why co-productivity is not best practice for all situations. The evaluation discloses a broad array of practices for enabling collaboration between researchers and users, including knowledge transfer with research push and user pull, weaker and stronger forms of co-production of knowledge, and funding schemes with a low level of prescription.

The goals of the funding schemes of this study vary greatly. In the case of Agora, a sensitisation of the public towards questions of scientific inquiry is pursued. The BSG–CSO funding scheme opens a door for users to participate in research endeavours. PAMS aim at sensitisation of non-academic stakeholders to emerging or neglected issues, negotiation between stakeholders, and implementation of solutions. R&D Funding by CTI intend an implementation of a solution and in most cases an economic profit.

Further, ‘user’ is a very broad category that is used differently in each funding scheme. Agora speaks of society in general and the broad public. PAMS refer to more specific user groups such as farmers, parliamentarians, or administrative staff. BSG–CSO

projects are oriented towards civil society organisations. The CPP small grants by IDRC target knowledge-based organisations in Canada and in low and middle income countries. In the context of R&D Funding by CTI, the user is in most cases a Swiss for-profit organisation or the Swiss public.

A co-productive approach is not always the best way to meet these different goals and the users involved. Sensitising the public towards scientific concerns, for example, needs good communication. Journalists, media specialists, or curators are skilled at translating research issues into plain language, and making these accessible to the broad public. Co-production of knowledge would be a wrong approach for this problem.

In the case of PAMS, the goal as well as the audience is openly defined by the procedures and principles of the funding scheme. It varies from project to project. If a project addresses a broad range of users and the goal is sensitisation of the public to research issues, knowledge transfer might be a good collaboration form. If a project addresses more specific user groups with the aim of effecting measurable changes and implementing solutions, co-production of knowledge is necessary.

We recommend that projects should not only be administered by the NCCR North-South Management Centre as this was the case in the past. The Management Centre should coach project applicants in the design of their projects, particularly for identifying a reasonable goal, a targetable user group, and a corresponding collaboration form. The Knowledge Mobilization Unit of York University, Canada, could be a role model in terms of services offered.

Recommendation 3: Identify options for tapping the potential of the broad range of activities that foster learning across academic boundaries. Examples of possible activities are: research communication, networking and supporting collaboration, grants, exchange of personnel, applied research, and training.

Finally, it is important to note that a co-productive project design is only one among various forms for fostering learning across academic boundaries. If we have a look at the compiled funding schemes (Annex 2), we can identify a great potential of learning activities that could be tapped in future. We recommend identifying options for making use of the broad range of activities that are represented by the funding schemes. These vary in terms of finances, roughly, from CHF 1000 to EUR 1.4 million, but also in terms of activities. Not all activities are based on a co-productive approach and may well be part of knowledge transfer or knowledge exchange. But the approaches complement each other. The solution lies in a wise combination of the different approaches in order to join forces.

The activities can be grouped in activities of research communication, networking, and supporting collaboration between researchers and users, grants, exchange of people as well as applied research and training. Here are a few activities mentioned in our sample:

Research communication:

- Research summaries: summaries, written in plain language, of policy-relevant research made available to the public (Knowledge Mobilisation Unit, York University[10])
- Translating research results into media products such as podcasts and videos aimed at communicating the results to the general public (ESRC, UK[11])

Networking and supporting collaboration between researchers and research users:

- Research forum: monthly topical breakfast (KM Unit, York University)
- Matching service: Provide a single point of entry for researchers or users seeking to connect with a partner and helping them to match (KM Unit, York University)
- Providing funding schemes to be used for collaboration among researchers or for research–user engagement such as for example the coordination and support actions (CA–SSA) of the EU 7th Framework Programme (European Commission, Research & Innovation[12])

Grants:

- Incentive grants: Researchers and users compete for a grant to develop a larger, collaborative project proposal (KM Unit, York University, Swiss td-net[13])
- Release time: Researchers and users compete for a course release from teaching to allow the researchers to devote time for a research-based collaborative activity (KM Unit, York University)

Exchange of people:

- Academic placement with a voluntary or business organisation (ESRC, UK)
- Industry–academic partnerships aim to increase the co-operation between research and private sectors. The researcher works temporarily in a for-profit organisation such as SME, private research institute, etc. and the staff of this organisation works temporarily at the university (The Industry–Academia Partnerships & Pathways scheme IAPP[14])

10 http://www.yorku.ca/research/innovation/knowledgemobilization/services.html; retrieved 24 April 2013.

11 British Economic and Social Research Council: http://www.esrc.ac.uk/funding-and-guidance/collaboration/knowledge-exchange/opportunities/; retrieved 24 April 2013.

12 http://ec.europa.eu/research/fp7/understanding/fp7inbrief/funding-schemes_en.html.

13 http://www.transdisciplinarity.ch/d/sd-universities/; retrieved 24 April 2013.

14 http://www.euresearch.ch/index.php?id=185.

Applied research and training:

- Doctoral programmes including potential employers: these programmes aim at improving the early-stage researchers' career perspectives in both public and private sectors (Initial Training networks ITN, EU 7th FP[15])
- Doctoral programme finances research projects at the interface of research and policy implementation. During the thesis, the students have the opportunity to conduct a six-month internship at a national or international organisation (Stiftung Mercator Schweiz[16])

The NCCR North-South provides many of the activities mentioned in the list. For example, the programme actively communicates research results in the form of press releases, policy briefs, videos, or podcasts. It also regularly organises knowledge exchange opportunities such as biannual research forums or big international conferences. The transdisciplinary approach of the programme ensures that every research project – be it at doctoral or postdoctoral level – has a knowledge exchange component. But some activities are new and interesting to be included in future. For example, the activities mentioned under grants and exchange of people could be further explored. Finally, the NCCR North-South could more consistently link the different activities in order to be an even more accessible, coherent, and effective research programme.

15 http://www.euresearch.ch/index.php?id=185; retrieved 24 April 2013.

16 http://www.plantsciences.ch/research/fellowships/mercator_fellowship/index_EN; retrieved 24 April 2013.

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Annex 1: Detailed Assessment of Funding Schemes Similar to PAMS

The annex introduces the funding schemes similar to the discussion of PAMS in Chapter 4 on results. The funding schemes are portrayed and assessed according to the typology of research–user collaboration.

Research and Development (R&D) funding by the Commission for Technology and Innovation (CTI)

The Research and development (R&D) funding by the Swiss Commission for Technology and Innovation (CTI) aims at fostering the national economy and value creation.

Portrait

Content of scheme	The R&D funding by the CTI supports projects jointly implemented by firms, public administration or non-profit organisations together with academic institutions (CTI 2012a, p. 13). Project funding is geared towards fostering competitiveness of the research user, referred to as implementing or business partner [Umsetzungspartner, Wirtschaftspartner] and/or contributing to the national economy and value creation (Bundesbehörden der Schweizerischen Eidgenossenschaft 2013, Art. 10o).
Donor	Commission for Technology and Innovation (CTI)
Embedding in superordinate funding structure	R&D funding is one of three instruments of the CTI. CTI is assigned by the Swiss government with the mission to foster "knowledge-based innovation" by financial means and consultancy (CTI 2012a, p. 13–15).
Existence period of scheme	CTI has been funding research and development projects since its foundation in 1943.
Scope of scheme	In the period 2004–2011, 2,204 projects were approved with a total funding volume of CHF 708.1 million. Thereof, 310 projects with a funding volume of 94.6 were approved in 2011 (CTI 2012c).

Operational structure	
Application modalities	Project Proposals using a given form can be submitted to CTI continually, no submission deadlines are set.
Decision body	Evaluation of project proposals is made by experts at CTI and followed by funding decisions within CTI (CTI 2012d).
Funding scope	▪ No fund limits are set explicitly. An indication on the funding scope gives a look into the past project approvals: In 2011, CHF 0.3 million were approved in average per project (CTI 2012c). ▪ CTI funding is directed to financing the participation of the research institution. Implementers are not allowed to receive funds (Bundesbehörden der Schweizerischen Eidgenossenschaft 2013, Art. 10o); on the contrary they are supposed to account for half of total project costs (Bundesbehörden der Schweizerischen Eidgenossenschaft 2013, Art. 10q).
Time frame	A project duration limit is not set. A qualitative indication is given with the notion "projects which aim for efficient and fast time-to-market" (CTI 2013b).
Thematic and regional focus	The project topic is left open. Projects have formally to be assigned to one of the four thematic areas: life sciences, micro-and nanotechnology, engineering sciences and enabling sciences (CTI 2013b).
Admitted applicants	Swiss research institutions[17] jointly with an implementing partner: A firm, public administration or non-profit organisation based in Switzerland. Firms and organisations must be listed in the Swiss commercial registers (CTI 2012b, p. 17).

Comment: R&D funding mainly includes projects aiming at innovation and operational benefits at firm level supposed having national economic effects. Projects conducted by public administration and non-profit organisations targeting macroeconomic benefits can be approved if the applicant organisations are able to prove the project impact in financial terms (Tanner 2013).

17 See list "Research institutions allowed for contributions" on CTI webpage.

Classification according to the typology of research–user collaboration

R&D funding: Minimum requirements of the funding scheme				
	Position at science–society interface	**Definition**	**Implementation**	**Outcomes**
Detailed assessment	Q1: No.	Q2: Yes Q3: Yes	Q4: Yes Q5: Yes Q6: Yes	Q7: Yes Q8: Yes
	Integration both into former research and user projects is foreseen, stronger specifications regarding user	Mutual roles of researcher and user are explicitly required	No prescription made, formal project management is recommended to be in the hands of implementing partner	Outcomes intended for researchers and users, but more for users
Overall assessment	O	X	X	X

Position at science–society interface

Question 1: Is the project to be linked to research projects and user projects? Answer: No.
There is no formal requirement for linking the project to other projects or activities. Project partners have to demonstrate in the project proposal how the project is linked to their previous activities in practice and research (CTI 2012b). The specifications considering the user side appear however stronger: the project has to be integrated in the users' activities in that an implementation plan has to be submitted after the project's formal end (CTI 2013a).

Stage of project definition

Question 2: Is the content of the projects (problem, aims) to be defined by researchers and users? Answer: Yes.
The scheme requires a joint project definition by the partners: This is a requirement for successful applications for the CTI Support (CTI 2013b). Further, the compulsory co-funding of the project by the user may ensure the user's active role at the stage of project definition (Bundesbehörden der Schweizerischen Eidgenossenschaft 2013, Art. 10q).

Question 3: Is the project to be submitted by researchers and users? Answer: Yes.
There is a prescription of a joint proposal submission by the implementing partner (user) and the research organisation (Bundesbehörden der Schweizerischen Eidgenossenschaft 2013, Art. 10x).

Stage of project implementation

Question 4: Are interactions between researchers and users required? Answer: Yes.
For the stage of project implementation no strong prescription is given. But it is understood from the project setting that strong interaction must take place.

Question 5: Are the activities to be carried out by researchers and users? Answer: Yes.
However, it is stated in the description of the funding scheme that formal project management ideally is held by the implementing partner (CTI 2013b).

Question 6: Are the activities to be defined by researchers and users? Answer: Yes.
Explanation given in Question 2. Furthermore a research and project plan is part of the project proposal, which has to be handed in by the researcher and implementing organisation jointly (CTI 2012b, p. 7).

Stage of project outcomes

Question 7: Are the project outcomes to be defined by researchers and users? Answer: Yes.
Explanation given in Question 2.

Question 8: Are project outcomes to be defined for researchers and users. Answer: Yes.
In the project proposal, business as well as "scientific–technical" aims have to be presented separately. The separate reporting indicates that outcomes for the user as well as the researcher are acknowledged (CTI 2012b, p. 7). For research, outcomes such as publications or patents are expected; for users, competitiveness or commercial launch are prescribed (Tanner 2013).

Business aims are listed in first order (CTI 2012b, p. 7). This may give an indication of its importance in relation to research outcomes. This prioritisation is in line with the overall goal of the funding scheme which is fostering competitiveness of the implementing partner [Umsetzungspartner] and/or contributing to the national economy and value creation:

> *Die KTI unterstützt Projekte der anwendungsorientierten Forschung und Entwicklung mit Beiträgen nur dann, wenn die Umsetzungspartner aufzeigen, dass eine wirkungsvolle Umsetzung der Forschungsergebnisse des Projekts am Markt erwartet werden kann. Dabei sind zu berücksichtigen: a. die voraussichtlichen Auswirkungen des Projekts auf die Wettbewerbsfähigkeit der Umsetzungspartner oder auf die Volkswirtschaft; b. die mit der Umsetzung verbundene voraussichtliche Wertschöpfung in der Schweiz; c. der beim Umsetzungspartner voraussichtlich resultierende wirtschaftliche Nutzen* (Bundesbehörden der Schweizerischen Eidgenossenschaft 2013, Art. 10o).

Overall, we qualify the R&D funding by CTI to be an excellent example of a funding scheme based on principles of co-production of knowledge.

International Development Research Centre (IDRC): Canadian Partnerships program: Small grants for innovative research and knowledge sharing

Small grants for innovative research and knowledge sharing by the Canadian Partnership program (CP) of the International Development Research Centre (IDRC) strives for strengthening the capacity of the Canadian international development and research community to carry out research and knowledge-related activities, with the potential to influence policy and practice

Portrait

Content of scheme	Overarching goal of the CP's small grants is to "strengthen the capacity of the Canadian international development and research community to carry out research and knowledge-related activities, with the potential to influence policy and practice" (IDRC 2013a, p. 3). Concretely, the funding scheme provides support to research, knowledge-building, knowledge-sharing projects as well as to events and small dissemination activities and products (IDRC 2013a, p. 4). Project proposals shall "fit with one or more of CP's identified outcome areas, which is: a) Strong collaboration in research and knowledge-sharing among Canadian institutions and with counterparts in LMICs; b) Increased contribution of Canadian collaborative research and knowledge to policy and practice of development actors; c) Improved capacity of Canadian institutions to learn from their experiences and to share lessons with others" (IDRC 2013a, p. 3)
Donor	International development research centre (IDRC) which is a Canadian crown corporation (= state owned enterprise) created in 1970
Embedding in superordinate funding structure	The "Small grants for innovative research and knowledge sharing" is a funding scheme provided by the Canadian Partnership program (CP) of the International Development Research Centre (IDRC). The mission of IDRC assigned by the Canadian parliament is to build "the capacity of people and institutions in development countries to undertake the research that they identify as most urgent. [...] The Canadian Partnerships program is unique within IDRC in that it directly and solely supports Canadian institutions" (IDRC 2013a, p. 2). The small grants are one of several funding possibilities provided by the IDRC (IDRC 2013c).
Existence period of scheme	The small grants funding scheme was introduced in 1993 (IDRC 2013a, p. 2).
Scope of scheme	In the period of 2011–2012, 33 projects were awarded according to four calls with a total volume of "approximately" CAD 1 million (IDRC 2013b).

Operational structure	
Application modalities	Proposal submission using a given form and within set deadlines; Calls for the small grants program are launched three times a year (IDRC 2013a, p. 6).
Decision body	Team of the Canadian Partnership program (IDRC 2013a, p. 6)
Funding scope	Regarding particularly 3rd call, 2012–2013: ▪ CAD 1,000–15,000 for support to events and dissemination activities/ products ▪ CAD 15,000–60,000 for support to research, knowledge-building, and knowledge-sharing projects (IDRC 2013a, p. 4)
Time frame	Project duration must not exceed 21 month (IDRC 2013a, p. 4). However, the prescribed time span may vary from call to call depending on the IDRC financial mechanisms (IDRC 2013d).
Thematic and regional focus	Regarding the thematic and regional focus, projects addressing "issues of 'international development' that fall within IDRC's thematic priorities" are generally supported (IDRC 2013a, p. 6–7).
Admitted applicants	Applicant organisations must have legal corporate registration in Canada. The CP strongly encourages collaborating with organisations in Canada and in low- and middle-income countries (LMICs) and within and across types of institutions (IDRC 2013a, p. 3; IDRC 2013d, p. 1).

Comment: Although the application is not restricted to research organisations, this is implicitly the case, as "the scientific merit of the concept note" is the first mentioned consideration in project selection (IDRC 2013a, p. 5). However, the distinction between researchers and users is tricky in this funding scheme, and not made explicit. Notions such as "development and research community" and "carry out research and knowledge-related activities", as well as the supported project types (research projects, knowledge-building projects, knowledge-sharing projects, events, small dissemination activities, and products) cannot be exclusively assigned to researchers but to a research-near group of people (IDRC 2013a).

Classification according to the typology of research–user collaboration

It is important to note that researchers and users are not clearly distinguished by the funding scheme.

IDRC: Minimum requirements of the funding schemes[18]				
	Position at science–society interface	**Definition**	**Implementation**	**Outcomes**
Detailed assessment	Q: No.	Q2: Yes, probably Q3: No	Q4: Yes, probably Q5: No Q6: Yes, probably.	Q7: Yes, probably. Y8: Yes, probably.
	Integration both into research and user projects is intended.	Stronger role is intended for researchers / research-near group	Stronger role is intended for researchers / research-near group	Outcomes intended for researchers and users equally
Overall assessment	O	(X)	(X)	(X)

Position at science–society interface

Question 1: Is the project to be linked to research projects and user projects? Answer: No.
No strong prescription regarding project integration is made, however it has to be clearly demonstrated how "the research or activity will add value to existing knowledge and/or practice, citing past work done on the theme by the applicant organization and by other researchers" (IDRC 2013a, p. 6–7).

Further, "evidence of clear need and demand for research and/or knowledge-sharing on the issue" (IDRC 2013a, p. 6–7) has to be proved, what implicitly can be understood as sort of integration in ongoing activities or interventions. This formulation leaves open whether the integration is towards the research side and/or towards the users' side.

Stage of project definition

Question 2: Is the content of the projects (problem, aims) to be defined by researchers and users? Answer: Yes, probably.
No strong prescription is made regarding the roles at the stage of project definition. Collaborating organisations "are expected to be involved in the design and execution of the project as appropriate" (IDRC 2013d, p. 1). Further, "those who will be involved on the ground in the long term" are meant to be involved in project design and implementation (IDRC 2013d, p. 2).

18 Particularly regarding 3rd call, 2012–2013.

Question 3: Is the project to be submitted by researchers and users? Answer: No.
Only one organisation can act as main applicant. This must be an organisation registered in Canada (IDRC 2013a, p. 5) "engaged in producing or sharing 'research and knowledge for development'" (IDRC 2013a, p. 2), but not necessarily an academic institution. Although it need not be an academic institution, scientific merits are decisive for success as these are mentioned as first evaluation criteria (IDRC 2013a, p. 5). For this reason we assume that researchers are given a strong role in the stage of the project definition.

Collaborative projects "within and across types of institutions" is given priority over single-institution projects (IDRC 2013a, p. 3). Collaborating organisations regardless of organisation type and preferably from Canada or low- and middle-income countries (LMICs) may be listed in the application (IDRC 2013d, p. 1).

Stage of project implementation

Question 4: Are interactions between researchers and users required? Answer: Yes, probably.
No strong prescription is made regarding the role assignment at the stage of project implementation. Collaborating organisations "are expected to be involved in the design and execution of the project as appropriate" (IDRC 2013d, p. 1). Further, "those who will be involved on the ground in the long term" are meant to be involved in project design and implementation (IDRC 2013d, p. 2).

Question 5: Are the activities to be carried out by researchers and users? Answer: No.
There is no formal prescription as to who is responsible for carrying out the activities. If we look at the activities supported by the scheme, these are all research- and knowledge-related. "This call offers two types of funding: 1) Support to research, knowledge-building, and knowledge-sharing projects. (…) 2) Support to events and to small dissemination activities and products" (IDRC 2013a, p. 4). Therefore, we assume that researchers are favoured as those responsible for the implementation.

Question 6: Are the activities to be defined by researchers and users? Yes, probably.
Explanation given in Question 2.

Stage of project outcomes

Question 7: Are the project outcomes to be defined by researchers and users? Answer: Yes, probably.
Explanation given in Question 2.

Question 8: Are project outcomes to be defined for researchers and users? Answer: Yes, probably.
Outcome areas explicitly supported by the scheme are:

A. "Strong collaboration in research and knowledge-sharing among Canadian institutions and with counterparts in LMICs

B. Increased contribution of Canadian collaborative research and knowledge to policy and practice of development actors
C. Improved capacity of Canadian institutions to learn from their experiences and to share lessons with others" (IDRC 2013a, p. 4)

The outcome areas indicate that Canadian institutions are benefiting from the funding scheme in improving research activities, research impact on policy and practice, and capitalizing on experience. These are clearly research outcomes. But individual careers – financing a PhD or postdoc study – cannot be financed by the funding scheme (IDRC 2013a, p. 5).

The outcome areas may well be users' outcomes as well, as collaboration, knowledge sharing, impacting and capitalising on experiences are important topics for knowledge-based organisations such as think tanks, NGOs, etc. Further, the funding scheme does not clearly distinguish between researchers and users. Finally, the evaluation criteria put an emphasis on development outcomes. The criteria define the usefulness of the funded projects: the submission must give a "[c]lear explanation of how the proposed research/event will build capacity, inform decision-making, and/or influence practice and learning by groups or organizations to benefit from the project, including the grant recipient itself" (IDRC 2013a, p. 7).

Overall, we qualify the CP small grants by IDRC to belong to the funding schemes based on principles of co-productivity. Yet, the prescription level is very low, therefore, it was not possible in all cases to clearly answer our questions.

Agora by the Swiss National Science Foundation (SNSF)

Agora by the Swiss National Science Foundation (SNSF) aims at fostering knowledge about science in the public, and enhancing the dialogue between researchers and society.

Portrait

Content of scheme	The Agora funding scheme aims at fostering knowledge about science in the public at large and enhancing the dialogue between researchers and society (SNSF 2010, Art. 1).
Donor	Swiss National Science Foundation (SNSF)
Embedding in superordinate funding structure	The SNSF "offers a wide range of research funding schemes which are open to scientists and academics of any nationality working in Switzerland" (SNSF 2013c).
Existence period of scheme	Agora was launched in 2011 with a first call.
Scope of scheme	31 projects with a total funding of CHF 4.2 million were approved within 2 calls (SNSF 2012a; 2013a).

Operational structure	
Application modalities	Proposals have to be submitted in in a predefined format (SNSF 2012c, p. 8) within set deadlines once a year (SNSF 2010, Art. 8).
Decision body	An international commission consisting of researchers and experts in research communications acts as decision body (SNSF 2012c, p. 9).
Funding scope	CHF 5,000–200,000 (SNSF 2012c, p. 4)
Time frame	Max. 3 years (SNSF 2012c, p. 4)
Thematic and regional focus	Agora provides financial support to projects disseminating general knowledge about scientific research to the open public, primarily in Switzerland (SNSF 2010, Art. 2). In doing so, projects have to foster an interactive dialogue between researchers and the public, as well as ensure the active participation of the target public. Agora allows for formats such as events, debates, exhibitions, interactive internet platforms, games, and artistic productions (SNSF 2012c, p. 5).
Admitted applicants	Application is restricted to researchers conducting research in Switzerland (SNSF 2012b, Art. 8) and holding an actual research project with funding from a competitive evaluation procedure (e.g. peer review) (SNSF 2013b).

Classification according to the typology of research–user collaboration

Agora: Minimum requirements of the funding scheme				
	Position at science–society interface	**Definition**	**Implementation**	**Outcomes**
Detailed assessment	Q1: No	Q2: No Q3: No	Q4: Yes Q5: No Q6: No	Q7: No Q8: No
	strong link to research is intended	Active role intended for researchers only	Active role intended for researchers only	Outcomes intended for users
Overall assessment	O	O	(X)	O

Position at science–society interface

Question 1: Has the project to be linked to research projects and user projects? Answer: No.

The project has to be linked to a current research project of the applicant. Further, it is mentioned in the guideline that projects may form part of other research communication activities such as contributions to a website, a science festival or an open house day of the research institution (SNSF 2012c, p. 5). No active role is assigned to the research user.

Stage of project definition

Question 2: Has the content of the project (problem, aims) to be defined by researchers and users? Answer: No.
The project has to be designed by the researchers. Optional support by knowledge brokers is recommended: "To ensure that the communication is of high quality, applicants may collaborate with persons or institutions specialised in knowledge transfer or public dialogue. These may include museums, journalists, communication experts, educators, artists, scenographers, etc." (SNSF 2012c, p. 4).

Question 3: Has the project to be submitted by researchers and users? Answer: No.
Formal project submission is restricted to the researchers.

Stage of project implementation

Question 4: Are interactions between researchers and users required? Answer: Yes.
Direct communication activities between researchers and the public are required and support from communication specialists is mentioned: "Funding is provided for projects set up and implemented by the researchers themselves, possibly in collaboration with communication or knowledge transfer experts, or artists. The responsibility for communicating directly with the public lies primarily with the researchers" (SNSF 2010, Art. 1).

Question 5: Are the activities to be carried out by researchers and users? Answer: No.
The researchers with optional support by communications and didactics specialists (knowledge brokers) are meant to lead the implementation of the project.

Question 6: Are the activities to be defined by researches and users? Answer: No.
The funding scheme requires researchers to define implementation activities, possibly supported by communication specialists (see Question 4).

Stage of project outcomes

Question 7: Are the project outcomes to be defined by researchers and users? Answer: No.
Researchers are responsible for formulating outcomes. It is mentioned that they can be supported by communication specialists.

Question 8: Are the project outcomes to be defined for researchers and users? Answer: No.
The outcomes for users – the broad public – is the main goal of the funding scheme. The guideline mentions as relevant societal outcomes a sensitisation of the public for the relevance of scientific questions and knowledge gained: "[D]escribe the impacts that you expect from the project in quantitative and qualitative terms. This may include creating or increasing awareness of research topics and challenges or stimulating interest in a research topic" (SNSF 2012c, p. 10).

Overall, the funding scheme agora by the SNSF belongs design defined by principles of knowledge transfer.

European Commission: Research for the benefits of specific groups – Civil society organisations (BSG–CSO)

Research for the Benefit of Specific Groups – Civil Society Organisations (BSG–CSO) by the European Commission aims at developing scientific knowledge related to CSO activities in order to contribute to public debate, and invites CSOs and research organisations to form partnerships and combine their knowledge.

Portrait

Content of scheme	The funding scheme Research for the Benefit of Specific Groups – Civil Society Organisations (BSG–CSO) was introduced "to allow civil society organisations (CSOs) to actively take part in calls for proposals. It aims to develop scientific knowledge related to CSO activities in order to contribute to public debate, and invites CSOs and [research organisations] to form partnerships and combine their knowledge" (European Commission 2013b). Thereby it responds to the emerging need from civil society organisations and researchers "not only to discuss scientific results but also to exchange views and work together more upstream in the research process" (European Commission 2013a). "Specifically, the funding scheme aims to: ▪ allow CSOs to find scientific responses to their needs; ▪ provide researchers with new inputs and perspectives for their activities; ▪ contribute to enriching public research agendas; ▪ broaden public access to scientific results" (European Commission 2013b).
Donor	European Commission
Embedding in superordinate funding structure	Seventh Framework Programme (FP7) of the European Commission
Existence period of scheme	Introduced in 2007 under FP7
Scope of scheme	Since its introduction, funding was applied under the work programmes "environment" and "socio-economic sciences and the humanities" and 10 projects approved with an average contribution of EUR 1.4 million per project.[19]

Comment: In addition to research activities, training, debates and dissemination can be founded (European Commission 2013a, p. 2).

19 Information retrieved from CORDIS project repository, which stores information about research and development projects, financed wholly or partly from the European Union budget: http://cordis.europa.eu/projects/.

Classification of BSG–CSO according to the typology of research–user collaboration

Prescription for this funding scheme is call-dependent. Generally, little specification is made. More detailed requirements are given through the relevant work programmes, when the scheme is employed in calls (European Commission 2013c, p. 6).

BSG–CSO: Minimum requirements of the funding scheme				
	Position at science–society interface	**Definition**	**Implementation**	**Outcomes**
Detailed assessment	Q1: No	Q2: Yes Q3: No	Q4: Yes Q5: Yes Q6: Yes	Q7: Yes Q8: No
	Not specified	Jointly by CSOs and ROs	Jointly by CSOs and ROs	Primarily for CSOs
Overall assessment	O	(X)	X	(X)

Position at science–society interface

Question 1: Is the project to be linked to research projects and user projects? Answer: No.
No specifications made regarding the project integration for the funding scheme as a whole. The only prescription is that among the applicants, there must be at least one CSO.

Stage of project definition

Question 2: Is the content of the projects (problem, aims) to be defined by researchers and users? Answer: Yes.
Projects are supposed to be defined jointly by CSOs and research organisations. The importance of a joint project formulation is highlighted in the flyer: "When civil society organisations require scientific knowledge in a field covered by one of these calls, they look for appropriate research organisations to prepare a joint project" (European Commission 2013a, p. 2).

Question 3: Is the project to be submitted by researchers and users? Answer: No.
Among the applicants, there must at least be a CSO (European Commission 2013c). It is not mandatory for researchers to be among the applicants.

Stage of project implementation

Question 4: Are interactions between researchers and users required? Answer: Yes.
Explanation given in Question 5.

Question 5: Are the activities to be carried out by researchers and users? Answer: Yes.
Projects are supposed to be implemented jointly by the CSOs and research organisations: "Once the proposal is accepted, research organisations and CSOs form a partnership and combine their knowledge to conduct the planned activities" (European Commission 2013a, p. 2).

Question 6: Are the activities to be defined by researchers and users? Answer: Yes.
Explanation given in Question 2.

Stage of project outcomes

Question 7: Are the project outcomes to be defined by researchers and users? Answer: Yes.
Explanation given in Question 2.

Question 8: Are project outcomes to be defined for researchers and users? Answer: No.
Projects funded through the BSG–CSO are fundamentally meant to be designed for the use of the participating CSOs: "The research results can be jointly owned by the participating CSOs, or if owners are different, the participating CSOs are provided with all the rights to use and disseminate the results" (European Commission 2013a, p. 2). Research impact for the benefit of users is described as an important goal for researchers: "[M]ost researchers want the knowledge they generate to benefit society in some way, and CSOs can help make this happen" (European Commission 2013b).

Research outcomes are not explicitly targeted in the framework of the funding scheme. This is in line with the overall goal, namely to "allow civil society organisations (CSOs) to actively take part in calls for [FP7] Proposals. It aims to develop scientific knowledge related to CSO activities in order to contribute to public debate, and invites CSOs and [research organisations] to form partnerships and combine their knowledge" (European Commission 2013b).

Overall, we qualify the funding scheme BSG–CSO by the European Commission to be a design based on principles of co-productivity.

Annex 2: Additional Information on the Sample of the Evaluation

We chose four funding schemes for this evaluation. There were, however, more funding schemes that complied with our selection criteria. These were:

- Knowledge Exchange Opportunities Scheme by the Economic and Social Research Council (ESRC), UK
- Student internship scheme by the Economic and Social Research Council (ESRC)
- Faculty Incentive Grant by York University, Canada
- Graduate Student Internship by York University, Canada
- On our doorsteps seed fund by the University of Brighton, UK
- Priority Action Projects by the Eastern and Southern Africa Partnership Programme (ESAPP), CH
- PSC-Mercator PhD Fellowship Programme, CH

We excluded these funding schemes from our study for time reasons.

In addition to these, we consulted other interesting funding schemes. These did not, however, fit our criteria. Some programmes referred to a very broad understanding of research while our study defines research narrowly as research taking place in association with universities and research institutes. In some programmes, research–user collaboration was an integral part of a research project and was not specifically funded, e.g. research communication of the Swiss National Research Programmes or the Knowledge and Technology Transfer units of the Swiss National Centres of Competence in Research NCCR.

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Donors increasingly require that the research they fund be of benefit for society and the environment. To this end, researchers addressing complex and uncertain problems would, ideally, work together with research users. This is not always easy: researchers are expected to collaborate with non-academic partners, but are not funded for the additional work. Collaborative research projects often cannot tap the full potential of user engagement, for organisational and institutional reasons. Therefore, specific institutional and organisational conditions are necessary that foresee or even foster research–user engagement; funding schemes are one possible solution.

Right from the start, the NCCR North-South programme introduced an innovative funding scheme for creating an environment conducive to collaboration between researchers and research users: Partnership Actions for Mitigating Syndromes of Global Change (PAMS). This evaluation assesses the types of collaboration supported by PAMS, as well as the value of PAMS as a funding scheme for collaboration. It compares PAMS with similar funding schemes of other universities, research programmes, or projects, and contains recommendations for adapting PAMS to new contexts in future.

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